POPULATION FLUCTUATIONS OF LEPIDOPTEROUS MOTHS AT SENORIES (FAYOUM GOVERNORATE) INDICATED BY LIGHT TRAP

By: Marguerite, A. Rizk; [1] and A.M. Amer[2]
1. Plant Prot. Res. Instit., Fayoum Experiment Station, Ministry of Agriculture.
2. Dept. of Entomol., , Faculty of Science,Cairo Univ.

ABSTRACT

Abundance of lepidopterous moths was studied at Senories "Fayoum Governorate" using Robinson light trap during one year started from August 1999 to July 2000. Results indicated 63 species in 8 families. Noctuidae was the most abundant family being 63.90% of the total number while Plutellidae was the least (0.34%). The total collected moths reached 1776. Two peaks were recorded, the 1st in August (1999) and the other during May (2000).

The most abundant species were *Spodoptera littoralis* Boisd. (Noctuidae-Amphypyrinae, 10.03%) and *Agrotis ipsilon* Hüfn. (Noctuidae-Noctinae, 9.75%). The lowest abundant species was *Acherontia atropos* (L.) (Sphingidae, Sphinginae), *Plutella xylostella* L. (Plutellidae - Plutellinae); *Sitotroga cerealella* Oliver (Gelechiidae - Aristorelinae); *Anarsia acaciae* Walsingham (Gelechiidae - Chelarinae) and *Caradrina atriluna* Guenée (Noctuidae - Amphipyrinae).

The study of lepidopterous moths density at Senories "Fayoum Governorate" during the whole year were carried out by Robinson light-trap. There were many authors used light-trap to known the population density in Egypt "Hosny, 1953; Hassanein, 1956; Hosny and Khattab, 1960; Nazmi, 1963; El-Sherif, 1965; Hanna & Atris, 1969 (a & b); Hassanein *et al.*, 1971; El-Saadany and Rizk 1973a&b; Hanna & Hamad, 1975; Hanna *et al.*, 1975; El-Kady *et al.*, 1980; Hamad *et al.*, 1983; Badr *et al.*, 1985 (a & b) and Salem *et al.*, 1989".

However, in this study, the new taxonomic taxa (Alford 1999, Heppner 1997 and Scoble 1995), was used and the new species names were given.

The mean objective of this work was study the population fluctuation and abundance, also we used the percentage to compare the abundance between families and species.

MATERIALS AND METHODS

Moths collection:

Lepidopterous insects were collected every four days by Robinson light-trap fitted with 200 Watts mercury vapour bulb. Dry specimens were taken and separated into Orders, then order Lepidoptera were taken to separate into families, genera and finally species in Department of Entomology, Faculty of Science, Cairo University.

Fayoum Faculty of Agriculture
March 28-30/2001

Light-trap was set up above a building with height about three meter in the farm in Senories region. This farm was cultivated with cotton, clover, olive, cabbage, wheat, maiz, cucumber, tomato during this work.

Preparation of moths:

Dry moths were mounted by pins for preparing to classify and identify. Some insects were used to make microscopic preparations.

For preparing genitalia, the abdomen of moths were separate and boiled in 10% caustic acids solution for about 30 min., then washed in distilled water and dissected in 50% ethyl alcohol under a stereoscopic binocular microscope. After wards the specimens were dehydrated in a series of alcohol, stained in basic fuchsin (dissolved in 70% alcohol) and dehydration continued gradually to 100% alcohol. The specimens were finally cleared in xylol and mounted in Canada balsam.

Data were summarized monthly and tabulated "monthly and seasonally" with percentage and total number.

RESULTS AND DISCUSSION

Table (1) shows families, genera and species of the lepidopterous moths caught by light-trap from August 1999 - July 2000. The total number was 1776 moths belonging to 63 species, 52 genera and 8 families. These families are Arctiidae, Gelechiidae, Geometridae, Noctuidae, Sphingidae, Plutellidae, Pyralidae and Tineidae (Table 2 & Fig. 1). The most abundance family was Noctuidae represented by 63.87% while the least was Plutellidae represented by 0.34%. The other families represented 1.30%; 1.92%; 6.76%; 4.17%; 20.35% and 1.30%, respectively.

The total monthly numbers of the catches are shown in Table (3) and Fig. (2). There were two peaks during May (total number 328; 18.47%) and August (207; 11.66%) and the lowest number was in January (30, 1.69%). Also, most of the recorded species are present in May and August (61 species for both months). This result agrees with Salem *et al.*, 1989.

Table (4) and Fig. (3) show the seasonal abundance of lepidopterous families, the maximum season was spring with the total number 649 (36.54% from the total number) while the lowest one was winter (299 specimens and represented 16.84% from the total number).

According to Heppner, 1997 and Scoble, 1995 the two families recorded in Egypt as Pyraustidae and Pyralidae are become one family Pyralidae and this two families are divided into several subfamilies (Also Nazmi, 1963 reported that family Pyraustidae is a subfamily of Pyralidae).

Table(1):List of lepidopterous moths collected from (Senories) Governorate Fayoum by light trap from August 1999 to June 2000

Months	1999					2000							
Taxa	8	9	10	11	12	1	2	3	4	5	6	7	T
ARCTIIDAE													23
Utetheisa pulchella (Linnaeus)	4	2	0	1	0	1	1	2	3	1	3	5	23
GELECHIIDAE													34
Anacampsinae													
Aproaerma anthyllidella (Hübner)	1	0	1	1	0	0	0	1	1	2	1	1	9
Aristorelinae													
Sitotroga cerealella (Oliver)	1	0	1	0	0	0	0	0	1	1	1	1	6
Chelariinae													
Anarsia acaciae Walsingham	0	1	1	0	0	0	0	1	1	1	0	1	6
Gelechiinae													
Pectinophora gossypiella (Saunders)	3	1	0	1	1	0	1	0	2	1	1	2	13
GEOMETRIDAE													120
Sterrhinae													
Chlorissa faustinata (Milliére)	2	1	2	1	0	1	1	2	1	2	5	4	22
Scopula donovani Distant	11	2	3	1	0	1	1	1	3	10	3	6	42
Rhodometra sacraria (Linnaeus)	5	1	2	1	0	0	1	1	2	6	2	4	25
Hemitheinae													
Hemidremadis affinis Wiltshire	4	3	2	0	0	0	0	1	0	1	1	2	14
Larentiinae													
Gymnoscelis rufifasciata (Haworth)	1	0	1	0	0	0	1	2	2	5	2	3	17
NOCTUIDAE													1135
Noctuinae													
Agrotis herzogi Rebel	3	1	5	0	1	0	20	8	2	4	1	2	47
Agrotis ipsilon (Hufnagel)	1	1	2	12	41	3	61	20	6	14	8	4	173
Agrotis segetum (Denis & Sch.)	2	2	5	2	1	0	13	3	1	2	2	6	39
Agrotis spinefera (Hübner)	5	0	4	2	2	4	4	2	8	6	6	5	48
Noctua pronuba Linnaeus	5	1	3	1	0	1	0	2	5	5	4	3	30
Euxoa canariensis (Boursin)	4	2	1	1	1	0	1	2	1	1	3	2	19
Heliothinae													
Heliothis nubigera (H.-Sch.)	2	2	1	0	2	0	0	3	4	5	2	2	23
Heliothis peltigera (D. & Sch.)	4	1	5	1	0	0	2	1	4	3	1	2	24
Helicoverpa aemigera (Hübner)	2	0	3	1	0	0	0	2	4	1	0	1	14
Hadeninae													
Mythimna consanguis (Guenée)	2	1	1	0	0	0	1	1	1	2	0	1	10
Mythimna loreyi (Duponchel)	3	1	0	1	0	0	12	6	1	3	1	0	28
Mythimna zeae (Duponchel)	2	1	1	1	1	0	5	1	2	1	1	3	19
Amphipyrinae													
Athet atriluna Guenée	3	3	2	2	2	0	2	1	4	1	1	1	22
Propsalta coptica Wiltshire	0	2	1	0	0	1	1	0	2	1	0	0	8
Sesamia cretica Lederer	6	0	1	4	1	1	1	1	5	1	2	0	23
Sesamia nonagrioides Lefebuvre	4	1	1	0	0	0	2	1	4	1	0	2	16
Sesamia waltishirei Rungs	2	1	0	0	0	0	0	1	3	0	1	2	10
Spodoptera cilium (Lederer)	9	4	2	3	0	1	3	2	5	25	6	4	65
Spodoptera exigua (Hübner)	9	4	4	14	6	0	3	1	12	26	11	3	93
Spodoptera littoralis Boisduval	12	8	9	15	9	1	4	4	5	79	26	6	178
Plusiinae													
Autographa gamma (Linnaeus)	1	0	3	8	3	0	5	6	9	5	1	1	42
Chrysodeixis chalcites (Esper)	1	0	1	4	2	0	2	4	1	1	0	0	16
Cornutiplusia circumflexa (Linnaeus)	3	1	2	9	0	1	5	3	20	5	1	1	51

Cont. Table (1):

Thysanoplusia daubei (Boisduval)	5	1	1	1	2	1	1	0	3	4	2	1	22
Trichoplusia circumscripta (Freyer)	2	3	7	1	0	0	1	4	17	5	2	1	43
Trichoplusia ni (Hübner)	3	1	2	2	0	0	0	3	2	1	2	0	16
Catocalinae													
Ophiusa tirhaca (Cramer)	2	0	3	1	0	0	1	0	1	4	1	0	13
Clytei haifae Habitach	1	0	1	0	0	0	0	3	1	2	1	0	9
Acontiinae													
Euplemma ostrina (Hübner)	3	1	2	0	0	0	0	1	2	3	1	0	13
Chloephorinae													
Earias insulana Boisduval	4	1	2	1	1	0	0	1	2	5	2	3	22
PLUTELLIDAE													6
Plutellinae													
Plutella xylostella (Linnaeus)	1	0	1	0	0	0	0	0	1	1	0	2	6
SPHINGIDAE													74
Sphinginae													
Agrius convolvuli (Linnaeus)	3	2	1	2	1	0	1	1	2	5	2	3	23
Acherontia atropos (Linnaeus)	0	0	0	0	0	0	0	0	0	1	0	0	1
Macroglossinae													
Hippotion celerio (Linnaeus)	5	3	2	2	1	0	2	1	3	7	5	3	34
Theretra alecto (Linnaeus)	2	1	1	0	0	1	1	2	1	3	2	2	16
PYRALIDAE													361
Pyraustinae													
Herpetogramma licarsisalis Walker	4	1	1	0	0	1	1	1	3	1	1	1	15
Noctuelia floralis Hübner	4	1	5	1	1	1	2	2	2	4	5	2	30
Nomophila noctuella (D. & Sch.)	5	1	3	6	4	0	1	1	5	7	2	1	36
Palpita unionalis Hübner	3	1	1	1	2	0	1	0	2	3	1	2	17
Plodia interpunctela Hübner	2	0	0	1	0	0	0	1	1	2	1	1	9
Pyrausta incoloralis Duponchel	4	1	2	1	0	1	0	3	1	3	1	2	19
Spolodea recurvalis (Fabricius)	2	1	3	1	1	0	0	2	1	0	0	2	13
Tegostoma baphialis Staudinger	5	1	4	0	1	0	1	0	1	7	9	2	31
Galleriinae													
Arenipses sabella Hampson	1	0	3	0	2	2	0	0	3	1	2	1	15
Pyralinae													
Chilo agamemnon Bleszynski	3	2	8	3	2	1	1	2	2	6	3	1	34
Pyralis farinalis (Linnaeus)	4	3	4	1	2	1	1	3	4	8	2	2	35
Phycitinae													
Cadra cautella (Walker)	7	2	3	1	0	1	1	0	3	6	2	2	28
Etiela zinckenella Treitschke	2	0	1	0	0	0	0	2	4	1	1	1	12
Ephestia kuehniella (Zeller)	3	1	1	1	0	2	1	3	1	3	2	1	19
Crambinina													
Euchromius cambridgei (Zeller)	3	2	5	2	1	1	2	1	2	4	1	2	26
Euchromius ocelleus (Haworth)	2	1	5	1	1	0	2	1	0	5	3	1	22
TINEIDAE													23
Tineinae													
Niditinea fuscella (Linnaeus)	2	0	1	0	0	0	0	1	1	1	0	1	7
Trichophaga abruptella Wollaston	3	1	2	0	0	1	0	2	1	3	1	2	16
Total	207	80	145	117	95	30	174	127	197	328	154	122	1776

Table (2): List of lepidopterous families collected from Senories (Fayoum Governorate) from August 1999 to July 2000.

Family	%	Total
Arctidae	1.30	23
Gelechiidae	1.91	34
Geometridae	6.76	120
Noctuidae	63.90	1135
Plutellidae	0.34	6
Sphingidae	4.17	74
Pyralidae	20.32	361
Tineidae	1.30	23

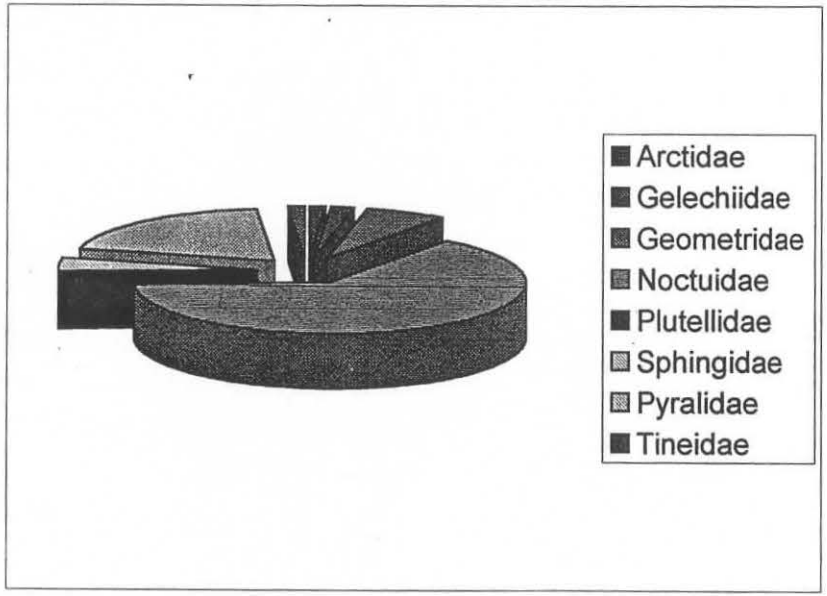

Fig. 1: Percentage of lepidopterous families collected from Senories (Fayoum Governorate) from August 1999 to July 2000

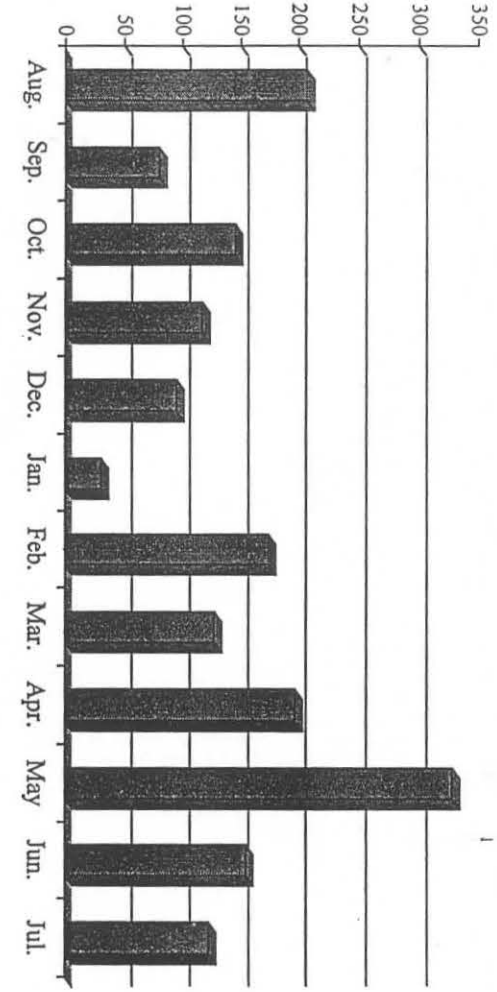

Fig. (2): Seasonal abundance of Lepidopterous moths from August 1999 to July 2000

Table (3): Total number of Lepidopterous insect from August 1999 to July 2000

Months	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.
Total number	207	80	145	117	95	30	174	127	197	328	154	122

Table (4): Seasonal abundance of lepidopterous families collected from Senories (Fayoum Governorate) from August 1999 to July 2000.

	Winter	Spring	Summer	Autumn
Arctidae	2	6	12	3
Gelechiidae	2	12	13	7
Geometridae	6	39	55	20
Noctuidae	239	438	250	208
Plutellidae	0	2	3	1
Sphingidae	7	26	27	14
Pyralidae	42	117	114	88
Tineidae	1	9	9	4
Total	299	649	483	345

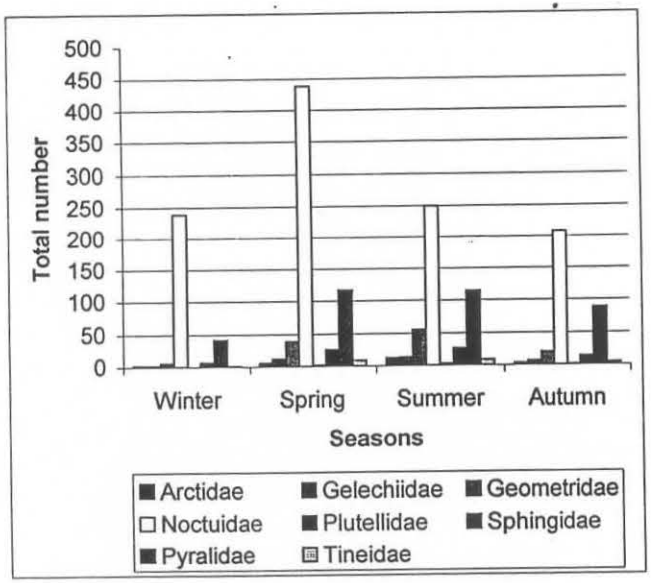

Fig. 3: Seasonal abundance of lepidopterous families collected from Senories (Fayoum Governorate) from August 1999 to July 2000

1. Family: Arctiidae:

One species on family Arctiidae was recorded with total number 23 and percentage 1.30% "*Utetheisa pulichella* (L.)". This species was active in the summer season, (specially in July and August) with total number 12 and 52.17% (Table 5).

Earies insulana Boisd. in some studies are present in this family (Badr *et al.*, 1985, b), but in this study we but it in family Noctuidae (subfamily: Chloephorinae) according to Heppner, 1997 & Markku Savela, 2000.

Table 5: Seasonal abundance of Arctiidae

Season	Winter	Spring	Summer	Autumn	Total
Utetheisa pulichella (Linnaeus)	2	6	12	3	23

2. Family: Gelechiidae

This family was represented by total number 34 and 1.92% of the total number of the catches. Four different species were recorded belonging to 4 different subfamilies (Table 6), the most abundant species was *Pectinophora gossypiella* (Saunders) (Gelechiinae, 13 specimens, 38.24% from total number of Gelechiidae) then *Aproaerma anthyllidella* (Hübner) (9 specimens, 26.47%) while the other two species with the same abundance (6 specimens, 17.65%). Summer was the most abundant season for these moths (total number was 13 specimens and 38.24%).

Table 6: Seasonal abundance of Gelechiidae

Season	Winter	Spring	Summer	Autumn	Total
Anacampsinae *Aproaerma anthyllidae* (Hübner)	0	4	3	2	9
Aristorelinae *Sitotroga cerealella* (Oliver)	0	2	3	1	6
Chelariinae *Anarsia acaciae* Walsingham	0	3	1	2	6
Gelechiinae *Pectinophora gossypiella* (Saunders)	2	3	6	2	13
Total	2	12	13	9	34

3. Family: Geometridae:

The 3rd family was Geometridae with the total number 120 specimens (6.76%) (Table 7). We recorded 5 species belonging to four subfamilies. The most abundant species was *Scopula donovani* Distant (Sterrhinae, 42 specimens, 35%), the large number caught during May and August, while the lower number caught during November to March. The lowest species was *Hemidremadis affinis* Wiltshire (Hemitheinae, 14 specimens, 11.67%), the large number caught during May and August. Gelechiid species were most abundant during summer with total number 55 and 45.83% from the total gelechiid moths.

Table 7: Seasonal abundance of Gelechiidae

Season	Winter	Spring	Summer	Autumn	Total	
Sterrhinae						
***Rhodometra sacraria* (Linnaeus)**	1	9	11	4	25	
***Scopula donovani* Distant**	2	14	20	6	42	89
Hemitheinae ***Hemidremadis affinis* Wiltshire**	0	2	7	5	14	
Geometrinae ***Chlorissa faustinata* (Milliére)**	2	5	11	4	22	
Larentiinae ***Gymnoscelis rufifasciata* (Haworth)**	1	9	6	1	17	
Total	6	39	55	20	120	

4. Family: Noctuidae:

The noctuid moths were the most abundant moths caught by light-trap. This family represented by 8 subfamilies containing 30 species belonging to 19 genera (Table 8 & Figs. 4). The total number was 1135 specimens with 63.98% of the total lepidopteous number. Amphipyrinae was the most abundant subfamily and represented by 413 specimens (36.38% of noctuid moths). Belonging to this subfamily there were 5 genera with 9 species. The lowest abundant subfamily was Acontiinae which represented by 13 specimens only with 1.15% and contain one genus with one species.

The most abundant species was *Spodoptera littoralis* Boisd. (Amphipyrinae) recorded by 178 and 15.68% from noctuid moths and 10.03% from total moths collected. The large number of individuals was obtained during May and June, while the lower number of individuals was obtained during January to March. The 2nd species was *Agrotis ipsilon* (Hüfn.) (Noctuinae) represented by 173 specimens and 15.24% from total noctuid moths and 9.75% from total moths collected. The large number of individuals was obtained during February and December while the lowest number was obtained during August to October. The 3rd species was *Spodoptera exigua* (Hübner) (Amphipyrinae), which represented by 93 specimens and 8.21% from total noctuid moths and 5.24% from total moths collected. The large number was obtained during May and November, while the lowest number was obtained during January to March. Then *Spodoptera cilium* (Lederer) (Amphipyrinae) and *Cornutiplusia circumflexa* (L.) (Plusiinae) with total number 63 and 51, respectively. Their percentage was 5.55% and 4.49%, and their higher number was during May and April. The moths were active during spring (438 specimens, 38.59%) and summer (250 specimens, 22.03%). The lowest species was *Propsalta coptica* Wiltshire (Amphipyrinae) which represented by 8 specimens only with 0.70% of noctuid moths.

There were some changed in this family:

- *Earies insulana* Boisduval changed from family Arctiidae to Family Noctuidae.
- *Helicoverpa armegira* (Hübner) changed from genus *Heliothis* Ochsenheimer, 1816 to *Helicoverpa* Hardwick, 1965.
- *Cornutiplusia circumflexa* (Linnaeus) changed from genus *Syngrapha* Hübner, 1821 to genus *Cornutiplusia* Kostrowicki, 1961.
- *Thysanoplusia daubei* (Boisduval) changed from genus *Trichoplusia* McDunnough, 1944 to genus *Thysanoplusia* Ichinose.

Table 8: Seasonal abundance of Noctuidae

Taxa/ Season	Winter	Spring	Summer	Autumn	Total	%
Noctuinae						
Agrotis herzogi Rebel	21	14	6	6	47	4.14
Agrotis ipsilon (Hufnagel)	105	40	13	15	173	15.24
Agrotis segetum (Denis & Sch.)	14	6	10	9	39	3.44
Agrotis spinifera (Hübner)	10	16	16	8	50	4.41
Noctua pronuba Linnaeus	1	12	12	5	30	2.65
Euxoa canariensis (Boursin)	2	4	9	4	19	1.67
Total	**153**	**92**	**66**	**47**	**358**	**31.54**
Heliothinae						
Heliothis nubigera (Herrich-Sch.)	2	12	6	3	23	2.07
Heliothis peltigera (D. & Sch.)	2	8	7	7	24	2.11
Helicoverpa armigera (Hübner)	0	7	3	4	14	1.23
Total	**4**	**27**	**16**	**14**	**61**	**5.37**
Hadeninae						
Mythimna consanguis (Guenée)	1	4	3	2	10	0.88
Mythimna loreyi (Duponchel)	12	10	4	2	28	2.47
Mythimna zeae (Duponchel)	6	4	6	3	19	1.67
Total	**19**	**18**	**13**	**7**	**57**	**5.02**
Amphipyrinae						
Athetis atriluna Guenée	4	6	5	7	22	1.94
Propsalta coptica Wiltshire	2	3	0	3	8	0.70
Sesamia cretica Lederer	3	7	8	5	23	2.07
Sesamia nonagrioides Lefebuvre	2	6	6	2	16	1.41
Sesamia waltishirei Rungs	0	4	5	1	10	0.88
Spodoptera cilium (Lederer)	4	31	19	9	63	5.55
Spodoptera exigua (Hübner)	9	39	23	22	93	8.19
Spodoptera littoralis Boisduval	14	88	44	32	178	15.68
Total	**38**	**184**	**110**	**81**	**413**	**36.38**
Plusiinae						
Autographa gamma (Linnaeus)	8	20	3	11	42	3.70
Chrysodeixis chalcites (Esper)	4	6	1	5	16	1.41
Cornutiplusia circumflexa (Linnaeus)	6	28	5	12	51	4.49
Thysanoplusia daubei (Boisduval)	4	7	8	3	22	1.94
Trichoplusia circumscripta (Freyer)	1	26	5	11	43	3.79
Trichoplusia ni (Hübner)	0	6	5	5	16	1.41
Total	**23**	**93**	**27**	**47**	**190**	**16.74**
Catacholinae						
Ophiusa tirhaca (Cramer)	1	5	3	4	13	1.15
Clytei haifae Habitach	0	6	2	1	9	0.79
Total	**1**	**11**	**5**	**5**	**22**	**1.94**
Acontiinae						
Euplemma ostrina (Hübner)	0	6	4	3	13	1.15
Total	**0**	**6**	**4**	**3**	**13**	**1.15**
Chloephorinae						
Earias insulana Boisduval	1	7	9	4	21	1.85
Total	**1**	**7**	**9**	**4**	**21**	**1.85**
Total	**239**	**438**	**250**	**208**	**1135**	

5. Family: Plutellidae:

This family was the lowest family caught during this study and it was represented by 6 specimens only with 0.34%. There was one species only *Plutella xylostella* (L.) (This species was recorded as a species of family Yponomeutidae but that is not right). This species was caught specially during July and August (Table 9).

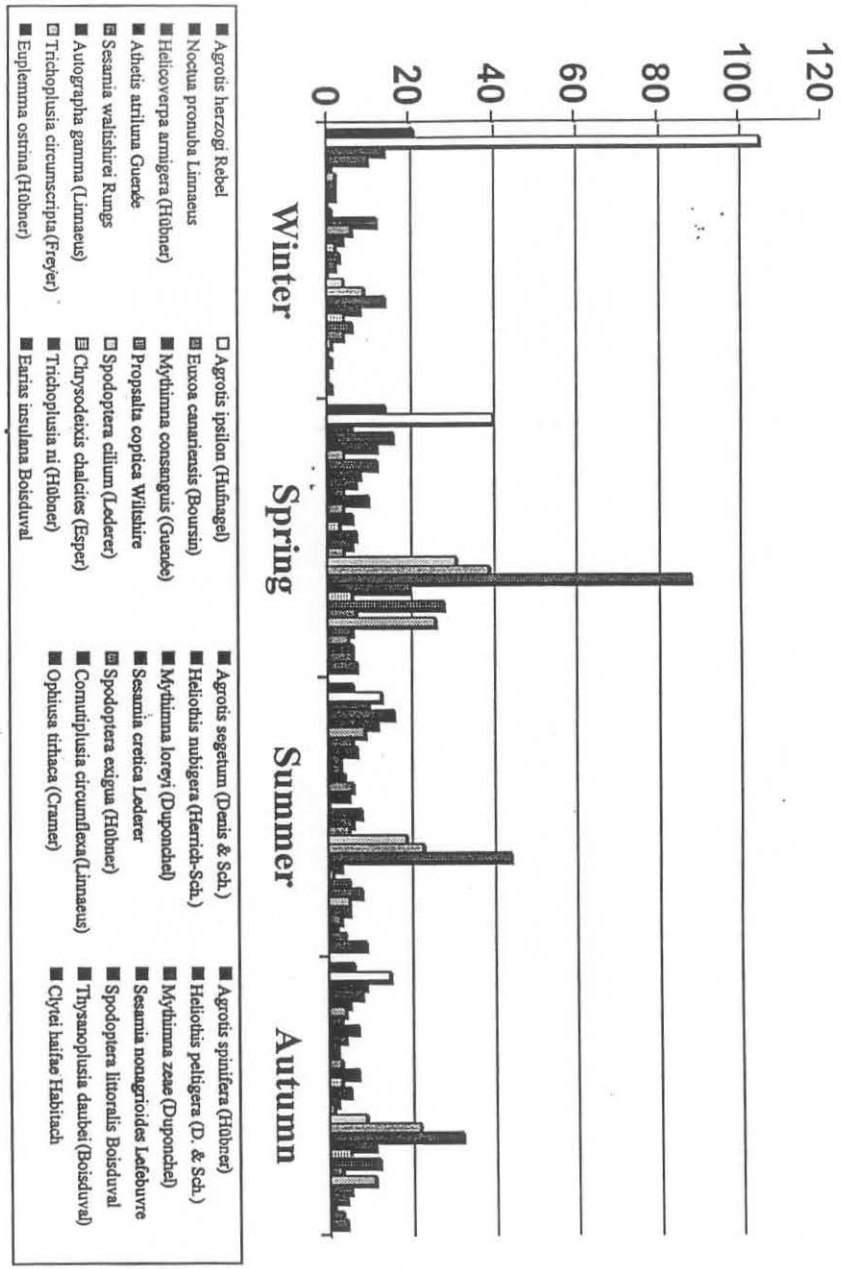

Fig. (4): Seasonal abundance of noctuid moths collecting in Fayoum region from August 1999 to June 2000

Table 9: Seasonal abundance of Plutellidae

Family \ Season	Winter	Spring	Summer	Autumn	Total
Plutella xylostella (Linnaeus)	0	2	3	1	6

6. Family: Pyralidae:

Data in Table (10) and Figs. (5) showed that this family was the second abundant family with total number 361 and 20.35%. There were 5 subfamilies including 16 species belonging to 15 genera. The major subfamily was Pyraustinae.

The most abundant species was *Nomophila noctuella* (Dennis & Schiffermüller) (Pyraustinae) recorded by 36 and 9.97% from pyralid moths and 2.03% from total moths collected. The large number of individuals was obtained during November and May, while the lower number of individuals was obtained during January to March. The 2nd species was *Pyralis farinalis* (L.) which as the same as *Nomophila noctuella* (approximately) in number (35 with 9.70%) and the larger number of individuals was caught during May. The lower number caught during January and February

- The two families Pyralidae and Pyraustinae were became under the family Pyralidae and changed into subfamilies.
- *Cadra cautella* (Walker) changed from genus *Ephestia* Guenée, 1845 to genus *Cadra* Walker, 1864.

Table 9: Seasonal abundance of Pyrallidae

	Winter	Spring	Summer	Autumn	Total	%
Pyraustinae						
Herpetogramma licarsisalis Walker	2	5	6	2	15	4.16
Noctuelia floralis Hübner	4	8	11	7	30	8.31
Nomophila noctuella (Dennis & Sch.)	5	13	8	10	36	9.97
Palpita unionalis Hübner	3	5	6	3	17	4.71
Pyrausta incoloralis Guenée	1	7	7	4	19	5.26
Spolodea recurvalis (Fabricius)	1	3	4	5	13	3.60
Tegostoma baphialis Staudinger	2	8	16	5	31	8.59
Total	18	49	58	36	161	44.60
Galleriinae						
Arenipses sabella Hampson	4	4	4	3	15	4.16
Total	4	4	4	3	15	4.16
Pyralinae					34	9.42
Chilo agamemnon Bleszynski	4	10	7	13		
Pyralis farinalis (Linnaeus)	4	15	8	8	35	9.70
Total	8	25	15	21	69	19.11
Phycitinae					28	7.76
Cadra cautella (Walker)	2	9	11	6		
Etiela zinckenella Treitschke	0	7	4	1	12	3.32
Ephestia kuehniella (Zeller)	3	7	6	3	19	5.26
Plodia interpunctela Hübner	0	4	4	1	9	2.49
Total	5	27	25	11	68	18.84
Crambinae					26	7.20
Euchromius cambridgei (Zeller)	4	7	6	9		
Euchromius ocelleus (Haworth)	3	6	6	7	22	6.09
Total	7	13	12	16	48	13.30
Total	42	118	114	87	361	

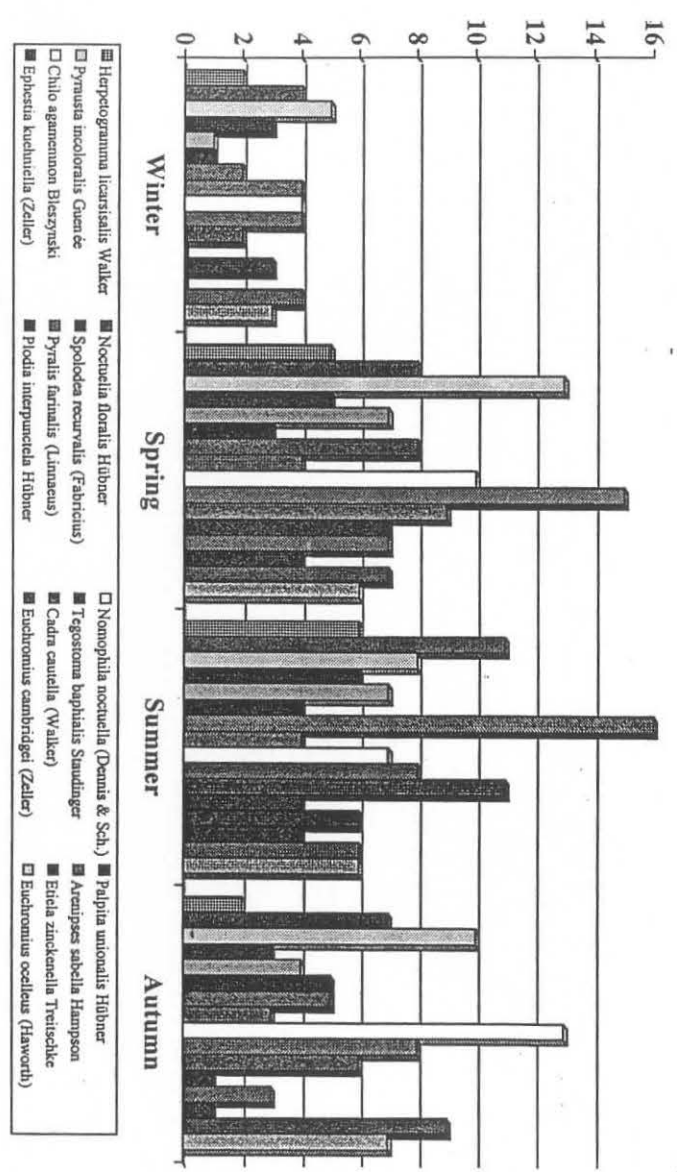

Fig. (5): Seasonal abundance of pyralid moths collecting in Fayoum region from August 1999 to July 2000

7. Family: Sphingidae:

The 7th family was Sphingidae and represented by 4 subfamilies. The total number of individuals was 74 specimens and caused 4.16% from the total number (Table 10). The more abundant species was *Hippotion celerio* (L.) represented by 35 individuals and caused 47.30% from the total sphingid moths. The large number of individuals was obtained during August and May, while the lower number of individuals was obtained during January. The lowest species was *Acherontia atropos* (L.) represented by one species only caught during May.

- *Agrius convolvuli* (Linnaeus) Changed from genus *Herse* to genus *Agrius*.
- *Hippotion celerio* (Linnaeus) changed from genus *Deilephia* to genus *Hippotion*.
- *Theretra alecto* (Linnaeus) changed from genus *Celerio* to genus *Theretra*.

Table 10: Seasonal abundance of Sphingidae

	Winter	Spring	Summer	Autumn	Total
Sphinginae *Agrius convolvuli* (Linnaeus)	2	8	8	5	23
Acherontia atropos (Linnaeus)	0	1	0	0	1
Total	2	9	8	5	14
Macroglossinae *Hippotion celerio* (Linnaeus)	3	11	13	7	34
Theretra alecto (Linnaeus)	2	6	6	2	16
Total	5	17	19	9	50
Total	7	26	27	14	74

8. Family: Tineidae:

The last family was Tineidae. It had two species only with total number 23 caused 1.29% of the total number of individuals (Table 11). The two species were *Niditinea fuscella* (L.) and *Trichophaga abruptella* Wollaston, the last species was the most abundant species with total number 16 caused 69.57% from the total number of the two species.

Table 11: Seasonal abundance of Tineidae

	Winter	Spring	Summer	Autumn	Total
Tineinae *Niditinea fuscella* (Linnaeus)	0	3	3	1	7
Trichophaga abruptella Wollaston	1	6	6	3	16
Total	1	9	9	4	23

ARABIC SUMMARY

تذبذب تعداد فراشات حرشفية الاجنحة بمنطقة سنورس
(بمحافظة الفيوم) باستخدام المصيدة الضوئية
مارجريت عدلى رزق* ، عبد الفتاح مبروك عامر**
*معهد بحوث وقاية النباتات .مركز البحوث الزراعية محطة البحوث الاقليمية بالفيوم.
**كلية العلوم، جامعة القاهرة ،قسم الحشرات

تم دراسة تعداد الفراشات (حرشفية الاجنحة) بمنطقة سنورس بمحافظة الفيوم باستخدام المصيدة الضوئية (Robinson) خلال عام من اغسطس ١٩٩٩حتى يوليو ٢٠٠٠.

ولقد أوضحت الدراسة ان هناك ٦٣ نوعا ينتمون إلى ٨ فصائل وهى نوكتيدى التى تمثل أكثر الفصائل تواجدا بنسبة ٩و٦٣% من إجمالى العدد المجموع من رتبة حرشفية الاجنحة بينما مثلت عائلة بليوتيلليدى تمثل أقل الأعداد تواجدا بنسبة ٣٤و% .

وكان العدد الكلى للحشرات حرشفية الأجنحة ١٧٧٦ فراشة ولقد سجلت قمة نشاطها ووفرتها خلال شهرى مايو واغسطس.

ولقد وجد أن النوع *Spodoptera littoralis* Boisd. (فراشة دودة ورق القطن) من تحت فصيلة امفيبيربيني (فصيلة نوكتيدى) تمثل ٠٣و١٠% وأيضا النوع *Agrotis ipsilon* Hufn. (فراشة الدودة القارضة) تحت فصيلة نوكتيني (فصيلة نوكتيدى) ٧٥و٩%.

وأن أقل الانواع وفرة ونشاطا خلال السنة هو *Acherontia atropos* Linnaeus من تحت فصيلة اسفينجيني (فصيلة اسفينجيدى) حيث وجدت مرة واحدة بعينة واحدة خلال شهر مايو وكذلك *Plutella xylosella* Linnaeus من تحت فصيلة بيلوتيللينى (عائلة بليوتيلليدي)، *Sitotroga cerealella* Oliverمن تحت فصيلة اريستوريليني (فصيلة جيليشييدي) و *Anarsia acaciae* Walsingham من تحت فصيلة جيليشييني (فصيلة جيليشييدى) وكذلك *Caradrina atriluna* Guenee من تحت فصيلة امفيبيريني (فصيلة نوكتيدي) بنفس النسبة وهى ٣٤و%.

REFERENCES

Abdel-Badi, A.H.G. (1977): Ecological studies on certain cotton pests in Dakahlia province. M.Sc. Thesis, Fac. Agnc., Alex. Univ.

Adford, D.V. (1999): A text book of Agricultural Entomology. Part I: 52-64.

Badr, M.A., Salem M.M., Hussein H.R, El-Samny M.A. and Rizk M.A. (1985 a): Existence and fluctuations of lepidopterous moths as indicated y light-trap at Dakahlia, Egypt. Minia J. Agr. Res. & Dev., 7 (2): 641-657.

Badr, M.A.. Salem M.M, El-Said L.M. and Abdel-Azim M. (1985 b): Occurrence and fluctuation of moths in Beni-Suef as indicated by a light-trap. Proc. 6th Arab pesticide Conf., Tanta Univ., 11: 159-167.

Bing-Cheng Zhang (1994): Index of Economically Important Lepidoptera. CAB International. Printed in UK at the University Press, Cambridge. 599pp.

El-Kady, E.A.; Amin, N.H.; Nazmi, K.H. and Ahmed, A.A. (1980): Seasonal activity of the moths and survey of host plants of the larvae for seven species of subfamily Plusiinae in Egypt (Lep., Noctuidae). 1st Conf. of Plant Prof. Res; Inst.(1980) Proc., 3: 349 - 363.

El-Saadany, G.B. and Rizk G.A. (1973 a): Population dynamics of the lesser cotton leaf-worm *Spodoptera exigua* (Hubn), in Upper Egypt. I, Egt. Pest. Cent. Cong., Assiut, 13-19.

El-Saadany, G.B. and Rizk G.A. (1973 b): Population dynamics of the lesser cotton leaf-worm *Spodoptera littoralis* (Boisd), in Upper Egypt. I. Egt. Pest. Cont. Cong., Assiut, 21-28.

El-Sayed, S. S. (1987): Studies on the ecology and survey of some insect species in North Sinai by the use of light traps. Ph. D. Thesis, Fac. of Agric., Suez Canal Univ, Egypt.

El-Sherif, S.I. (1965): Studies on the borers in Alexandria district. (Ph.D. Thesis, Fac. of Agric., Alex. Univ.)

Frost, S.W. (1952): Light-traps for insect collections, survey and control. Bull. 550 Agric. Expt. Sta. State, College, Pennsylvania. U.S.A.

Glick, P.A. and Graham, H.M. (1965): Seasonal light-trap collections of lepidopterous cotton insects in South Texas. J. Econ. Entomol., 58:880-882.

Graham, H.M. (1964): Nocturnal activity of adults of six lepidopterous pests of cotton as indicated by light-trap collections. Ann. Entomol. Soc. Amer.. 57: 328-332.

Hamad, N.E.F., Hanna F.M. and El-Sheikh A.M.M. (1983): Time of flight of certain pyralid species in relation to weather factors as measured by a light-trap at Quena. Bull. Soc. ent., Egypt. 63: 61-69.

Hanna, K.LI, and Atries, I.E. (1969 a): The effect of moon light on certain nocturnal Lepidoptera. Bull. Soc. ent, Egypt. 53: 7-12.

Hanna, K.LI, and Atries, I.E. (1969 b): On the time of flight of certain nocturnal Lepidoptera as measured by a light-trap. Bull. Soc. ent. Egypte, 53: 535 - 545.

Hanna, H.M. and Atries I.E. (1970): The flight activity of certain nocturnal Lepidoptera in relation to temperature and humidity. Bull. Soc. ent., Egypt, 54: 1-6.

Hanna, H.M. and Hamad N.E.F. (1975): Time of flight of Lepidoptera as indicated by three light-traps. Bull. Soc. ent., Egypt, 59 : 61-71.

Hanna, H.M. and Hamad N.E.F. and Nazmi N.H. (1975): Seasonal abundance of certain species of nocturnal Lepidoptera at different levels. Bull. Soc. ent., Egypt, 59 : 1-16.

Hassanein, M.H. (1956): Nocturnal activity of insects as indicated by light-traps. Bull. Soc. Ent.. Egypt, 40: 463 - 479.

Hassanein, M.H.; Khalil, P.M. and El-Naby, A.A. (1971): Abundance and population density of three lepidopterous insects in Upper Egypt. Bull. Soc. ent., Egypt, 55: 79-83.

Heppner, J.B. (1997): Family classification of Lepidoptera. ATL Home Page, association for Tropical Lepidoptera.

Hosny, M. M. (1953): Studies on the activity and abundance of Macrolepidoptera in relation to environment. Ph.D. Dissertation, London Univ.

Hosny, M.M. and Khattab, A.A. (1960): Phonological and ecological studies on the abundance of seven species of insect pests as indicated by catches in an ultra violet light trap in the Giza area. Agric. Res. Rev., Egypt, 38(1): 129-165.

Ibrahim, I.L. (1977): Studies on the activity of some flight insects in Nasr City. M. Sc. Thesis, Fac, of Agric, Al-Azhar Univ.

Nazmi, H. N. (1963): Taxonomy and Morphology of certain genera of Pyraustinae as represented in Egypt U.A.R. (Pyralidae: Lepidoptera) M.Sc. Thesis, Fac. Agric. Ain Shams Univ.

Parencia, C.R. and Davis, J. W. (1962): Relationship of Lepidoptera light-trap collections (U.S.A.) J. Econ. ent. 55: 692 - 695.

Popescu, G.A. and Beratlief, C. (1977): Data on the seasonal variation of injurious Lepidoptera capture in the year 1973 in the ultra-violet light-trap at Bucharest (Romania). Bancasa Analela Institutului de cercetari Pentra Protectia Plantelor, 12: 245-251.

Salem, M.M.; Etman, A.A. and M.A. Badr (1989): Abundance of noctuid moths captured by light-trap (Noctuidae – Lepidoptera). Agricultural Research Review, 67(1): 141-148.

Savela, M. (2000): Finland Lepidoptera list (Internet paper).

Scoble, M.J. (1995): The Lepidoptera, Form, Function and Diversity. Published in United States by Oxford UniversityPress. Inc., New York, 404pp.

Sharaf-El-Din, A.A.A. (1981): The nocturnal activity of some insect orders as indicated by capture in a light-trap at Giza region. M.Sc. Thesis, Fac. Agric.. Cairo Univ.

Willams, C.B. (1939): An analysis of four years captures of insects in the light-trap. 1 -General survey, sex proportions, phenology, and time of flight. Trans. R. Entomol., Soc., London. 84: 79-132.